

## State Water Policy

### The Need for a State Water Policy:

- 1.1 Water is the elixir of life. It is part of a larger ecological system and vital to the essential environment for sustaining all life forms. It is a basic human need and must be managed in the most optimal manner so that consumption and development needs are met. As a scarce and precious resource its usage has to be planned, along with conservation and management measures, on an integrated and environmentally sound basis, keeping in view the socio-economic needs of the State. In the 21st century, efforts to develop, conserve, utilize and manage this important resource in a sustainable manner have to be guided by the State's perspective.
- 1.2 Water, as a resource is one and indivisible: rainfall, river waters, surface ponds and lakes and ground water are all part of one system. In Himachal Pradesh availability of water is highly uneven in both space and time. Precipitation is confined to only about three or four months in a year and varies from about 600 mm in Lahaul & Spiti district to around 3200 mm in Dharamshala District Kangra. However, in spite of heavy rain and snow during the rainy season and winter the summer months are periods of water scarcity in many areas as the flow in the rivers and nallahs is quite low and traditional sources also dry up. This results in forced migration of humans and animals to the banks of rivers with perennial flows. On the other hand, heavy rains regularly cause havoc due to floods. Flash floods also cause damage in the higher reaches of the State. Thus, through its Water Policy the State also has to address the issues of drought management in some areas and flood control in others.
- 1.3 Planning and implementation of water related projects has many socio-economic aspects and issues such as environmental sustainability, resettlement and rehabilitation of project-affected people and livestock, public health concerns of water impoundment, dam safety etc. Clear guidelines are necessary in these matters. Moreover, certain problems and weaknesses have affected the water resources projects that have been implemented or are in the process of implementation in the State. Complex issues of equity and social justice in regard to water usage and distribution have to be addressed systematically. The development and exploitation of the groundwater resources in the state have raised concerns about the need for scientific management and conservation. Common policies and strategies are necessary to address these issues.
- 1.4 Expansion of economic activity inevitably leads to increasing demands for water for diverse purposes: domestic, commercial and industrial, irrigation, hydro- power generation, recreation, etc. So far, the major consumptive use of water in the State has been for irrigation. The gross irrigation potential of the State is estimated to be 3.35 lakh ha., while the irrigation potential created has reached 2.05 lakh ha. by April, 2005. Production of food grains in H.P. has increased from around 0.7 million tonnes in the year 1966-67 to about 1.4 million tonnes in the year 2003-04. This will have to be raised to around 2.4 million tonnes by the year 2025 AD to meet the needs of the projected population of 92.25 lakh. The production of fruits and vegetables has increased from 0.05 million tonnes(1966-67) each to 0.7and 0.9 million tonnes(2003-04) respectively. We need to cover the balance area of 1.25 lakh ha. by irrigation schemes so that the productivity of the culturable land area of the State improves, food grain output increases and through diversion of the land to cultivation of vegetable, horticulture and cash crops the economic prosperity of the agriculturists is ensured and enhanced.
- 1.5 The drinking water needs of the people and livestock have also to be met. Demand of water for industrial use has so far largely been concentrated in or near the towns. However, the domestic and industrial water demand in rural areas is expected to increase sharply as the development programmes improve economic conditions and more industry comes up there. Impounding of water for hydropower generation will also increase as the potential in this sector is harnessed. This underscores the need for the utmost efficiency in water utilization and public awareness of the importance of conservation and maintenance of water quality.
- 1.6 Water quality is impacted by untreated or inadequately treated industrial effluents and sewage flowing into nallahs and rivers or affecting the surface and ground water. Since this can adversely affect the health of the populace, special attention will have to be paid to these aspects. Improvements in existing strategies, innovation

of new techniques resting on a strong science and technology base are needed to eliminate the pollution of surface and ground water resources, to restore the pristine quality of former years. Technology and training have to play important roles in the development of water resources and their management.

- 1.7 Clearly, a number of issues and challenges have emerged in the development and management of the water resources. It is imperative therefore to formulate a State Water Policy for Himachal Pradesh backed with an action plan for implementation that will be executed in a time bound manner .
- 1.8 The State Water Policy has its objective to ensure that available water resources are utilized in an efficient manner to meet drinking water needs and irrigation requirements in a manner that also promotes, conservation and engenders community participation. The State Water Policy seeks to make water everybody's business and to catch rain water where it falls or where it can be used optimally. Besides, the harnessing of water for commercial, industrial and hydro- power generation usage must take place in a sustainable manner with due regard to maintenance of water quality.

#### **Participator approach:**

- 2.1 The State Water Policy must be implemented in a manner that promotes a participatory approach and involves local communities and stakeholders, including women, in the management of water resources, in an effective and decisive manner in various aspects of planning, design, development and management of the water related schemes.
- 2.2 Necessary legal and institutional changes shall be made at various levels for the purpose, duly ensuring more meaningful decision making roles for women. Water Users' Associations and the local bodies such as municipalities and gram panchayats shall particularly be involved in the operation, maintenance and the management of water related infrastructure/facilities at appropriate levels, progressively, with a view to eventually transfer the management of such facilities to the user groups/local bodies.
- 2.3 Private sector participation may also be encouraged wherever feasible in planning, development and management of the water resources for the usage of the general public and the community.

#### **Information System:**

- 3.1 A well developed information system, for water related data in its entirety, at the State level is a prime requisite for resource planning. A standardized state information system should be established with a network of data banks and data bases, integrating the State and Central level agencies and improving the quality of data collection and analysis.
- 3.2 Standards for coding, classification, processing of data and methods/procedures for its collection should be adopted. Advances in information technology must be incorporated to develop a modern information system promoting free exchange of information among various agencies. Special efforts should be made to develop and continuously upgrade the technological capability to collect, process and disseminate reliable data in the desired time frame.
- 3.3 Apart from the data regarding water availability and actual usage the system may be equipped to provide reliable projections of demand of water for diverse purposes along with availability in different areas of the State.

#### **Water Resource Planning:**

- 4.1 Water resources available to the State should be brought within the category of utilizable resources to the maximum possible extent. Ground water exploitation for domestic use and irrigation will be promoted wherever feasible and improvising of surface water in pondages for usage during lean periods shall be encouraged.

- 4.2 Non-Conventional methods for augmenting availability of water such as artificial recharge of ground water and traditional water conservation practices like rain water harvesting, including roof-top rainwater harvesting and use of such water through dual plumbing systems in all buildings need to be promoted. Pilot projects will be supported for demonstration effect. Research and development in these areas shall also be supported.
- 4.3 Water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi- sectorally, taking into account surface and ground water for sustainable use incorporating quantity and quality aspects as well as environmental considerations. All individual developmental projects and proposals should be formulated and considered within the framework of such an overall plan keeping in view the existing agreements/awards for a basin or a sub-basin so that the best possible combination of options can be selected and sustained.
- 4.4 Watershed management through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest cover and the construction of check-dams and trenching should be promoted. Efforts shall be made to conserve the precipitation in the catchment area itself.
- 4.5 Overriding ownership rights over water sources rest with the State. Water may be made available to water short areas by transfer from other areas including transfers from one river basin to another, based on a state perspective, after taking into account the requirement of areas/basins. Water scarce neighbourhoods will enjoy priority entitlement to avail the water available in adjoining areas for meeting their drinking water needs.

**Institutional Mechanism :**

- 5.1 With a view to give effect to the planning, development and management of the water resources on a hydrological unit basis, alongwith a multi-sectoral, multi- disciplinary and participatory approach as well as integrating quality, quantity and environmental aspects, the existing institutions at various levels under the water resources sector shall be appropriately reoriented/reorganized and even created, wherever necessary .The institutional arrangements should be such that the aspect of maintenance of water related schemes is given importance equal or even more than that of new constructions.
- 5.2 Development and management of a river basin as a whole or sub-basins, should take place in a planned manner involving multi-disciplinary units that prepare comprehensive plans taking into account not only the needs of irrigation but also harmonizing various other water uses, so that the available water resources are determined and put to optimum use.

**Role of PRIs in conflict resolution:**

- 6.0 Guided by the traditional individual and community entitlements to water use enshrined in the Wazib-ul-arz (record of customary rights) 'Water Adalats' may be devised as a conflict resolution mechanism under the aegis of the local PRIs.

**Water Allocation Priorities:**

- 7.0 In the planning and operation of systems, water allocation priorities should be broadly as follows:

- Drinking water
- Irrigation
- Ecology/ Afforestation/biodiversity/tourism
- Agro-industries
- Hydro-power
- Non-agro-based industries.
- Navigation and other uses.

However, this is subject to modification if warranted by special considerations in any area/region.

### **Project Planning and Management:**

- 8.1 Water resource development projects should as far as possible be planned and developed as multipurpose projects but provision for drinking water shall be a primary consideration. There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment area treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development. Besides, in projects for hydropower generation involving impounding of water, adequate water shall be released round the year to meet the needs of downstream users. The sustainability evaluation of the Project shall determine " Environmental Discharge" to be prescribed for the Project, which shall not be less than 15% of the available discharge at any given time. In forest areas the extraction of water shall be planned keeping in view the needs of the flora and fauna of the area. The involvement and participation of beneficiaries and other stakeholders will be encouraged at the project planning stage itself.
- 8.2 The study of the likely impact of a project during construction and later on human lives, settlements, occupations, socio-economic, environment and other aspects shall form an essential component of project planning.
- 8.3 In the planning, implementation and operation of projects, the preservation of the quality of environment and the ecological balance should be a primary consideration. The adverse impact on the environment, if any, should be minimized and should be off-set by adequate compensatory measures.
- 8.4 Environmental Impact Assessment of major and medium scale projects shall preferably be carried out by independent agencies.
- 8.5 The planning of projects in hilly areas shall take into account the need to assure drinking water supply, hydro-power development and irrigation networks appropriate to the terrain of the area. The cost benefit analysis of projects in these areas shall reflect these aspects.
- 8.6 Special efforts should be made to investigate and formulate projects either in or for the benefit of backward areas and areas inhabited specially disadvantaged groups such as the socially weak and persons belonging to the scheduled castes and scheduled tribes. In other areas also, project planning should pay special attention to the needs of the weaker sections of society.
- 8.7 Time and cost overruns and deficient realization of benefits characterizing most water related projects shall be overcome by upgrading the quality of project preparation and management. The inadequate funding of projects should be obviated by an optimal allocation of resources on the basis of prioritization, having regard to the early completion of on-going projects as well as the need to reduce regional imbalances.
- 8.8 A close monitoring of projects to identify bottlenecks and to adopt timely measures to obviate time and cost overrun should be an integral part of project planning and execution.
- 8.9 Longitudinal studies should be carried out to monitor and evaluate the performance and socio-economic impact of water resource projects.
- 8.10 The drainage system should form an integral part of any irrigation project right from the planning stage.

### **Water Audit:**

- 9.0 Taking into account the fact that substantial losses of raw and treated water take place between the bulk storage, distribution and usage points thereby reducing availability to the ultimate users and financial losses to

the supplying agencies as well as giving rise to deficiency in service and dissatisfaction with the public services, audit of the working of systems shall be carried out periodically in accordance with the guide lines for water audit and water conservation and rectification measures initiated where necessary.

#### **Ground Water Development:**

- 10.1 There shall be a periodical reassessment of the ground water potential taking into consideration the quality of that available and economic viability of its extraction.
- 10.2 The detrimental environmental consequences of over-exploitation of ground water need to be effectively prevented. Exploitation of ground water resources shall be so regulated as not to exceed the recharging possibilities, as also to ensure social equity. Ground water recharge projects will be developed and implemented for improving both the quality and availability of ground water resources.
- 10.3 Integrated and coordinated development of surface water and ground water and their conjunctive use, shall be envisaged right from the project planning stage and should form an integral part of the project implementation.

#### **Drinking Water:**

- 11.1 Adequate, safe and sustainable drinking water facilities will be provided to the entire population both in urban and in rural areas throughout the year. Wherever there is no alternative source of drinking water, irrigation and multipurpose projects shall invariably include a drinking water component. Drinking water needs of human beings and domestic animals shall be the first charge on any available source of water.
- 11.2 Monitoring and surveillance of the quality of drinking water with emphasis on prevention of water borne diseases and proper operation and maintenance of the water supply system is of utmost importance. A "Catchment Area Approach" shall be adopted by involving grass root level educational and technical institutions in utilizing existing resources and strengthening them by providing additional technical and financial support for their activities in this area. Awareness on matter related to water borne diseases, their manifestation, symptoms, aspects of prevention and simple remedies shall be developed through effective information, education and communication programmes.
- 11.3 A transformation from a target based, supply-driven approach that pays little attention to the actual practices and/or preferences of the end users, to a demand- based approach, where users get the service that they want and are willing to pay for, is urgently required. Implementation of a participatory demand driven approach will ensure that the public obtains the level of service they desire and can afford to pay for through the mechanism of a tariff policy. The HRD programmes should aim at capacity building and empowerment of Panchayati Raj Institutions/Local Bodies with the objective of enabling them to take up the total management, including operation and maintenance activities of water supply systems.

#### **Irrigation:**

- 12.1 Irrigation planning whether in an individual project or in basin as a whole shall take into account cost-effective irrigation options possible from all available sources of water and appropriate irrigation techniques should be adopted for optimizing water use efficiency. Irrigation intensity should be such as to extend the benefits of irrigation to as large a number of farm families as possible, keeping in view the need to maximize productivity of culturable lands.
- 12.2 An effective integration of water-use and land-use policies will be developed.
- 12.3 Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water between head-reach and tail-end farms and between large and small farms shall be obviated by adoption of a rotational water distribution system.

- 12.4 Concerted efforts shall be made to ensure that the irrigation potential that has been developed is fully utilized and the gap between potential and utilization is closed. To achieve this purpose, the command area development approach should be adopted in all irrigation projects.
- 12.5 Since irrigation accounts for the largest proportion of the consumptive use and of fresh water, the aim will be to get optimal productivity per unit of water usage. Scientific water management and farm practices and sprinkler and drip systems of irrigation shall be promoted wherever feasible.

**Resettlement and Rehabilitation:**

- 13.0 Optimal use of water resources necessitates construction of storages and the consequent resettlement and rehabilitation of the displaced population. As far as possible, large storages shall be avoided and the State shall evolve its resettlement and rehabilitation policy taking into account the local conditions, so that displaced persons are also able to share the benefits of the projects. Careful planning shall be ensured so that the project construction and rehabilitation of affected families proceeds simultaneously and smoothly.

**Financial and Physical Sustainability:**

- 14.1 Besides developing additional water resource facilities, the physical and financial sustainability of existing facilities needs special attention. Water user charges shall attempt to cover gradually the operation and maintenance charges of providing the service initially as well as a part of the capital costs. Subsidies on water rates shall be well targeted and transparent.
- 14.2 All linked inter-departmental financial resources available shall be pooled and the nodal department would facilitate further leveraging of resources for raising funds for capital investment. A revolving fund may be created to fund prioritized activities in select areas.
- 14.3 There is an urgent need of a paradigm shift in the management of water resources sector, from the emphasis on the development and expansion of water resource infrastructure for diverse uses, to improvement of the performance of the existing water resource facilities. Therefore, allocation of funds under the water resources sector should be re-prioritized to ensure that needs for development as well as operation and maintenance of the facilities are met in an equitable and sustainable manner .
- 14.4 A Citizen's Charter shall be developed with a view to guaranteeing efficiency, transparency and accountability in the delivery of drinking water and irrigation services.

**Participation of Centre/basin States & Funding agencies Inter State Resolutions:**

- 15.0 Major river systems originate in the state of H.P. and flow through here to other states. The State may enter into agreements with the Government of India and , other States for exploitation of the water resources on a cost and benefit sharing basis.
- 15.1 The State will work within the allocations made under various Inter State agreements.

**Water Quality:**

- 16.1 Both surface water and ground water shall be regularly monitored for quality. A phased programme shall be undertaken for effecting improvements in different parameters.
- 16.2 Water quality parameters for different uses shall continuously be reviewed with a view to effecting improvement in water quality.

- 16.3 Effluents shall as far as possible be treated to acceptable levels and standards before discharging them in natural streams. Backwash discharge in water treatment plants shall also be treated before release into the open.
- 16.4 The principle of 'polluter pays' should be followed in management of polluted water.
- 16.5 Necessary legislation may be enacted for preservation of existing water bodies and preventing encroachment of the same and consequent deterioration of water quality.

**Water Zoning:**

- 17.0 Economic development activities including agricultural, industrial and urban development, should be planned with due regard to the constraints imposed by the configuration of water availability. Water zoning of the State should be done in a time bound manner and the economic activities should be guided and regulated in accordance with such zoning.

**Conservation of Water:**

- 18.1 Efficiency of utilization in all the diverse uses of water should be ensured and awareness of water as a scarce resource should be fostered. Consciousness about conservation should be promoted through education, regulation, incentives and disincentives. Water resources should be conserved and the availability augmented by maximizing retention in the catchment area, minimizing pollution and avoiding wastage.
- 18.2 Water resources should be conserved and the availability augmented by maximizing retention in the catchment area, minimizing pollution and avoiding wastage. For this, measures like selective lining of the conveyance systems, modernization and rehabilitation of existing water distribution systems roof top rain water harvesting, recycling, and re-use of treated effluent water, and new techniques like drip and sprinkler irrigation may be promoted, wherever feasible.
- 18.3 Adoption of traditional techniques like mulching or pitcher irrigation may be revived through capacity building.

**Flood Control & Management:**

- 19.1 A master plan for flood control and management for each flood prone basin shall be prepared.
- 19.2 Adequate flood cushion should be provided in water storage projects, wherever feasible, to facilitate better flood management. In highly flood prone areas, flood control may be given overriding consideration in reservoir regulation policy even at the cost of sacrificing some irrigation or power benefits.
- 19.3 While physical flood protection works like embankments, spurs and dykes will continue to be necessary, increased emphasis should be laid on non-structural measures such as flood forecasting and warning, flood plain zoning and flood proofing for the minimization of losses and to reduce the recurring expenditure on flood relief measures.
- 1.9.4 There should be strict regulation of settlements and economic activity in the flood plain zones along with flood proofing, to minimize the loss of life and property on account of floods.
- 19.5 The flood forecasting activities should be modernized, value added and extended to uncovered areas. Inflow forecasting to reservoirs should be instituted for their effective regulation.

**Land erosion by rivers and tributaries:**

- 20.1 The erosion of land by rivers should be minimized by the suitable cost effective measures and construction of rain water harvesting structures should be encouraged to check soil erosion and flash floods. The State shall

undertake steps to ensure that indiscriminate occupation and exploitation of land near the river banks is discouraged. Economic activity on river banks and beds must be properly regulated.

**Drought prone area development:**

- 21.1 Drought-prone areas should be made less vulnerable to drought associated problems through soil-moisture conservation measures, water harvesting practices, minimization of evaporation losses, development of ground water potential including recharging and transfer of surface water from surplus areas where feasible and appropriate. Pastures, forestry or other modes of development which are relatively less water intensive shall be encouraged. In planning water resource development projects, the needs of drought-prone areas should be given priority.
- 21.2 Relief works undertaken for providing employment to drought affected populations should preferably be aimed at drought proofing of the affected area.

**Maintenance and Modernization:**

- 22.1 Structures and systems created for water resource management should be properly maintained in good health. Appropriate annual budgetary provisions should be made for this purpose. Preventive maintenance shall be given due attention for reducing overall maintenance cost, optimizing water use and making projects sustainable. There should be a regular monitoring of structures and systems and necessary rehabilitation and modernization programs should be undertaken.
- 22.2 Formation of Water User's Associations with authority and responsibility shall be encouraged within a defined time frame to facilitate the management, including maintenance, of irrigation systems in a participatory manner.

**Safety of Structures:**

- 23.0 There should be proper organizational arrangements for ensuring the safety of storage dams and other water related structures involving consultation with specialists in investigation, design, construction, hydrology, geology etc. Legislation related to dam safety may be enacted to ensure proper inspection, maintenance and surveillance of existing dams and also to ensure proper planning, investigation, design and construction for safety of new dams. The guidelines on the subject should be periodically updated and reformulated. There should be a system of continuous surveillance and regular visits by experts.

**Science & Technology:**

- 24.0 For effective and economical management of our water resources, the frontiers of knowledge need to be pushed forward in several directions by intensifying research efforts in various areas, including the following:
- hydrometeorology;
  - snow and lake hydrology;
  - surface and ground water hydrology;
  - river morphology and hydraulics;
  - assessment of water resources;
  - water-harvesting and ground water recharge;
  - water quality;
  - water conservation;
  - evaporation and seepage losses;
  - recycling and re-use;
  - better water management practices and improvements in operational technology;
  - cost effective technology for treatment, transmission and distribution of drinking water;
  - crops and cropping systems;



- soils and material research;
- new constructional material and technology;
- seismology and seismic design of structures;
- the safety and longevity of water-related structures;
- economical designs for water resource projects;
- risk analysis and disaster management;
- use of remote sensing techniques in development and management measures;
- sedimentation of reservoirs;
- prevention of water logging and soil salinity;
- reclamation of water logged and saline lands;
- environmental impact;
- regional equity.

#### **Human Resources Development (Training)**

- 25.0 A perspective plan for upgradation of human resources shall be an integral part of water resources development. This shall include training in information systems, sectoral planning, project planning and formulation, project management, operation of projects and their physical structures and systems and the management of the water distribution systems. The training should extend to all the categories of personnel involved in these activities as also the farmers and other user groups.

#### **Conclusion:**

- 26.0 In view of the vital importance of water for the sustenance of human and animal life, for maintaining ecological balance and for economic and developmental activities of all kinds, and considering its increasing scarcity, the planning and management of this resource and its optimal, economical and equitable use is a matter of utmost urgency. Concerns of the community need to be taken into account for water resources development and management. The success of the State water policy will depend on evolving and maintaining a consensus and commitment to its underlying principles and objectives. The State Water Policy may be revised as necessary from time to time.